water-repellant protective film; and

a third refinement step for eliminating the elements (metal impurities) Na, Mg, K, Ca, Mn, Fe, Cu, Li, Al, Cr, Ni, Zn and Ag and particles in a liquid chemical obtained after the mixing step, by using a particle-eliminating membrane and an ion exchange resin membrane.

[Claim 4] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in claim 3, characterized by further comprising a discharge step where the liquid chemical obtained after the third refinement step is brought into contact with an electrically conductive material.

[Claim 5] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in any of claims 1 to 4, characterized in that the agent for forming a water-repellant protective film comprises at least one selected from the group consisting of silylation reagents represented by the following general formula [1] and an acid or base.

$(R^1)_aSi(H)_bX^1_{4-a-b}$ [1]

~~[In the formula [1],~~ wherein R^1 mutually independently represents a monovalent organic group having a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^1 mutually independently represents at least one selected from the group consisting of a monovalent functional group of which element to be bonded to a silicon element is nitrogen, a monovalent functional group of which element to be bonded to a silicon element is oxygen, a halogen group, a nitrile group and $-CO-NH-Si(CH_3)_3$ group; "a" is an integer of from 1 to 3; "b" is an integer of from 0 to 2; and the total of "a" and "b" is 1 to 3.~~]~~

[Claim 6] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in claim 5, characterized in that the acid comprises at least one selected from the group consisting of hydrogen

chloride, sulfuric acid, perchloric acid, phosphoric acid, sulfonic acid represented by the following general formula [2] and anhydride thereof, carboxylic acid represented by the following general formula [3] and anhydride thereof, alkyl borate ester, aryl borate ester, boron tris(trifluoroacetate), trialkoxyboroxin, boron trifluoride and a silane compound represented by the following general formula [4].

$R^2S(O)_2OH$ [2]

~~[In the formula [2],~~ wherein R^2 represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)~~.]~~;

R^3COOH [3]

~~[In the formula [3],~~ wherein R^3 represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)~~.]~~;

$(R^4)_cSi(H)_dX^2_{4-c-d}$ [4]

~~[In the formula [4],~~ wherein R^4 mutually independently represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^2 mutually independently represents at least one selected from the group consisting of chloro group, –OCO–R^5 (where R^5 is a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)) and –$OS(O)_2$–R^6 (where R^6 is a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)); "c" is an integer of from 1 to 3; "d" is an integer of from 0 to 2; and the total of "c" and "d" is 1 to 3~~.]~~

[Claim 7] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in claim 5, characterized in that the base comprises at least one selected from the group consisting of ammonia, N,N,N',N'-tetramethylethylenediamine, triethylenediamine, dimethylaniline, alkylamine, dialkylamine, trialkylamine, pyridine, piperazine,

N-alkylmorpholine and a silane compound represented by the following general formula [5].

$$(R^7)_eSi(H)_fX^3_{4-e-f} \quad [5]$$

~~[In the formula [5],~~ wherein R^7 mutually independently represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^3 mutually independently represents a monovalent functional group of which element to be bonded to a silicon element is nitrogen, the monovalent functional group possibly containing a fluorine element and/or a silicon element; "e" is an integer of from 1 to 3; "f" is an integer of from 0 to 2; and the total of "e" and "f" is 1 to 3.~~]~~

[Claim 8] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in any of claims 5 to 7, characterized in that the solvent comprises at least one selected from the group consisting of hydrocarbons, esters, ethers, ketones, halogen-containing solvents, sulfoxide-based solvents, lactone-based solvents, carbonate-based solvents, polyalcohol derivatives having no OH group, and nitrogen element-containing solvents having no N–H group.

[Claim 9] A method for preparing a liquid chemical for forming a water-repellant protective film on a wafer, as claimed in any of claims 1 to 4, characterized in that the agent for forming a water-repellant protective film comprises at least one kind selected from the group consisting of compounds represented by the following general formulas [6] to [13] and their salts.

$$R^8–P(=O)(OH)_g(R^9)_{2-g} \quad [6]$$

~~[In the formula [6],~~ wherein R^8 represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); R^9 mutually independently represents a monovalent organic group having a C_1-C_3 hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); and "g" is an integer of from 0 to 2.~~]~~;

R^{10}–C(=O)–X^4 [7]

~~[In the formula [7],~~wherein R^{10} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; X^4 represents a group selected from the group consisting of fluoro group, chloro group, bromo group and iodo group~~.]~~;

$R^{11}R^{12}R^{13}N$ [8]

~~[In the formula [8],~~wherein R^{11} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; R^{12} represents a hydrogen element, a monovalent organic group having a C_1-C_{18} hydrocarbon group, or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; R^{13} represents a hydrogen element, a monovalent organic group having a C_1-C_{18} hydrocarbon group, or a monovalent organic group having a C_1-C_8 fluoroalkyl chain~~.]~~;

R^{14}–C(=O)–X^5–X^6 [9]

~~[In the formula [9],~~wherein R^{14} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; X^5 represents an oxygen element or sulfur element; X^6 represents a group selected from the group consisting of a hydrogen element, alkyl group, aromatic group, pyridyl group, quinolyl group, succinimide group, maleimide group, benzoxazole group, benzothiazole group and benzotriazole group; and a hydrogen element(s) of these groups may be substituted with an organic group~~.]~~;

$R^{15}(X^7)_h$ [10]

~~[The~~wherein the formula [10] represents a compound where "h" hydrogen element(s) or fluorine element(s) of R^{15} representing a C_1-C_{18} hydrocarbon the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s) is mutually independently substituted with a group represented by X^7, the group X^7 being at least one selected from the group consisting of an isocyanate group, mercapto group, aldehyde group, –CONHOH group and a cyclic structure containing a nitrogen element, wherein "h" is an integer of from 1 to 6~~.]~~;

R^{16}–X^8 [11]

~~[In the formula [11],~~wherein X^8 represents a cyclic structure containing a sulfur element; R^{16} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain~~.]~~;

R^{17}–C(=O)–X^9–C(=O)–R^{18} [12]

~~[In the formula [12],~~wherein R^{17} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; R^{18} represents a monovalent organic group having a C_1-C_{18} hydrocarbon group or a monovalent organic group having a C_1-C_8 fluoroalkyl chain; and X^9 represents an oxygen element or a sulfur element~~.]~~;

$(R^{24}–O–(R^{25}O)_t–)_uP(=O)(OH)_{3-u}$ [13]

~~[In the formula [13],~~wherein R^{24} mutually independently represents a C_4-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); R^{25} mutually independently represents a C_2-C_6 divalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); "t" mutually independently represents an integer of from 0 to 10; and "u" is 1 or 2.~~]~~

[Claim 10] A method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in claim 9, characterized in that the solvent comprises at least one selected from the group consisting of hydrocarbons, esters, ethers, ketones, halogen-containing solvents, sulfoxide-based solvents, lactone-based solvents, carbonate-based solvents, alcohols, polyalcohol derivatives, nitrogen element-containing solvents and water.

[Claim 11] A liquid chemical for forming a water-repellant protective film, prepared through the steps of the method for preparing a liquid chemical for forming a water-repellant protective film, as claimed in any of claims 1 to 10.

nitrogen element-containing solvents having no N–H group.

[Claim 17] A method for preparing a liquid chemical kit for forming a water-repellant protective film, as claimed in any of claims 12 to 16, characterized in that the silylation reagent comprises at least one selected from the group consisting of silicon compounds represented by the following general formula [1].

$(R^1)_aSi(H)_bX^1_{4-a-b}$ [1]

~~[In the formula [1],~~ wherein R^1 mutually independently represents a monovalent organic group having a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^1 mutually independently represents at least one selected from the group consisting of a monovalent functional group of which element to be bonded to a silicon element is nitrogen, a monovalent functional group of which element to be bonded to a silicon element is oxygen, a halogen group, a nitrile group and –CO–NH–$Si(CH_3)_3$ group; "a" is an integer of from 1 to 3; "b" is an integer of from 0 to 2; and the total of "a" and "b" is 1 to 3.~~]~~

[Claim 18] A method for preparing a liquid chemical kit for forming a water-repellant protective film, as claimed in any of claims 12 to 17, characterized in that the silylation reagent comprises a silicon compound represented by the following general formula [14].

$R^{19}_iSiX^{10}_{4-i}$ [14]

~~[In the formula [14],~~ wherein R^{19} mutually independently represents at least one group selected from a hydrogen group and a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s), wherein the total number of carbons contained in all of the hydrocarbon groups bonded to a silicon element is not smaller than 6; X^{10} mutually independently represents at least one group selected from a monovalent functional group of which element

to be bonded to a silicon element is nitrogen, a monovalent functional group of which element to be bonded to a silicon element is oxygen, a halogen group, a nitrile group and –CO–NH–$Si(CH_3)_3$ group; "i" is an integer of from 1 to 3.~~]~~

[Claim 19] A method for preparing a liquid chemical kit for forming a water-repellant protective film, as claimed in any of claims 12 to 18, characterized in that the acid comprises at least one selected from the group consisting of hydrogen chloride, sulfuric acid, perchloric acid, phosphoric acid, sulfonic acid represented by the following general formula [2] and anhydride thereof, carboxylic acid represented by the following general formula [3] and anhydride thereof, alkyl borate ester, aryl borate ester, boron tris(trifluoroacetate), trialkoxyboroxin, boron trifluoride and a silane compound represented by the following general formula [4]~~.~~

$R^2S(O)_2OH$ [2]

~~[In the formula [2],~~wherein R^2 represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)~~.]~~;

R^3COOH [3]

~~[In the formula [3],~~wherein R^3 represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)~~.]~~;

$(R^4)_cSi(H)_dX^2_{4-c-d}$ [4]

~~[In the formula [4],~~wherein R^4 mutually independently represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^2 mutually independently represents at least one selected from the group consisting of chloro group, –OCO–R^5 (where R^5 is a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)) and –$OS(O)_2$–R^6 (where R^6 is a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s)); "c" is an integer of from 1 to 3; "d" is an integer of from 0 to 2; and the total of "c" and "d" is 1 to 3.~~]~~

[Claim 20] A method for preparing a liquid chemical kit for forming a water-repellant protective film, as claimed in any of claims 12 to 18, characterized in that the base comprises at least one selected from the group consisting of ammonia, N,N,N',N'-tetramethylethylenediamine, triethylenediamine, dimethylaniline, alkylamine, dialkylamine, trialkylamine, pyridine, piperazine, N-alkylmorpholine and a silane compound represented by the following general formula [5].

$$(R^7)_eSi(H)_fX^3_{4-e-f} \quad [5]$$

[~~In the formula [5],~~ wherein R^7 mutually independently represents a C_1-C_{18} monovalent hydrocarbon group the hydrogen elements of which may partially or entirely be replaced with a fluorine element(s); X^3 mutually independently represents a monovalent functional group of which element to be bonded to a silicon element is nitrogen, the monovalent functional group possibly containing a fluorine element and/or a silicon element; "e" is an integer of from 1 to 3; "f" is an integer of from 0 to 2; and the total of "e" and "f" is 1 to 3.]

[Claim 21] A liquid chemical kit for forming a water-repellant protective film, prepared through the steps of the method for preparing a liquid chemical kit for forming a water-repellant protective film, as claimed in any of claims 12 to 20.